INDEX TO VOLUME 28

The index covers only the major papers, their authors, and principal headings. It does not include the abstracts. For the latter there is a separate index to authors on pages 198A–207A. Minutes of business meetings, officers, and reports are entered only under American Society of Zoologists.

Abstracts, see note above.
  Index of authors, annual meeting, San Francisco, California, 198A–207A.
  Key word index, 208A–214A.
  Of annual meeting, San Francisco, California, 1A–214A.
ALEXANDER, R. MCNEILL, Why mammals gallop, 237–245.
American Society of Zoologists,
  Committees, iv–v.
  Divisional officers, iv.
  Financial statement, vii.
  Minutes of annual business meeting, vi–vii.
  Officers for 1988, iv–v.
  Presidents, iii.
American Zoologist,
  Directions for authors, cover 1.
  Editorial board, cover 1.
  Statement of ownership, xviii.
  Subscriptions, cover 1.
ANDERSON, GARY, see HART, NATHAN H.
Animal behavior, energetics and, 811–938.
ARNOLD, STEVAN J., Behavior, energy and fitness, 815–827.
BAYNE, B. L., A. J. S. HAWKINS, AND E. NAVARRO, Feeding and digestion in suspension-feeding bivalve molluscs: The relevance of physiological compensations, 147–159.
"BEAUMONT, WILLIAM," Gastric digestion, 665–670.
BELISLE, SERGE, see BELLABARBA, DIEGO *et al.*
BELLABARBA, DIEGO, SERGE BELISLE, NICOLE GALLO-PAYET, AND JEAN-GUY LEHOUX, Mechanism of action of thyroid hormones during chick embryogenesis, 389–399.
BENNETT, ALBERT, Structural and functional determinates of metabolic rate, 699–708.
BENSON, KEITH R., Why American marine stations?: The teaching argument, 7–14.
BITTNER, GEORGE D., Long term survival of severed distal axonal stumps in vertebrates and invertebrates, 1165–1179.
BOCK, WALTER J., The nature of explanations in morphology, 205–215.
BOCK, WALTER J. AND DOMMINIQUE G. HOMBERGER, Preface, 185–187.
BODE, H. R., S. HEIMFELD, O. KOIZUMI, C. L. LITTLEFIELD, AND M. S. YAROSS, Maintenance and regeneration of the nerve net in Hydra, 1053–1063.
BOOK REVIEWS, 289–291; 809–810; 1047–1048; 1189–1190.
BORCHERS, PETER, see BRANCH, GEORGE M. *et al.*
BOUTILIER, ROBERT G., Interactions between transcutaneous ion transfer processes and carbon dioxide excretion in amphibians, 1009–1018.
BRANCH, GEORGE M., PETER BORCHERS, CHRISTOPHER ROBERT BROWN, AND DI DONNELLY, Temperature and food as factors influencing oxygen consumption of intertidal organisms, particularly limpets, 137–146.
BRIDGES, CHRISTOPHER ROBERT, Respiratory adaptations in intertidal fish, 79–96.
BROWN, CHRISTOPHER ROBERT, see BRANCH, GEORGE M. *et al.*
BULLOCH, ANDREW G. M. AND PETER G. JONES, Modulation of neurite outgrowth by intact and axotomized adult neurons of *Helisoma*, 1123–1134.
BURGGREN, WARREN W., Role of the central circulation in regulation of cutaneous gas exchange, 985–998.
BURGGREN, WARREN W., see FEDER, MARTIN E. *et al.*
BURNETT, LOUIS E., Physiological responses to air exposure: Acid-base balance and the role of branchial water stores, 125–135.
CAPLAN, ARTHUR L., Rehabilitating reductionism, 193–203.
CARPENTER, F. LYNN, see HIXON, MARK A.
CLARK, LARRY AND ROBERT E. RICKLEFS, A model for evaluating time constraints on short-term reproductive success in altricial birds, 853–862.
COMPARATIVE ENDOCRINOLOGY OF THE THYROID, 293–440.
  Avian thyroid development, 427–440.
  Enterohepatic regulation of thyroid hormones, 373–387.
  Environment and the teleost thyroid, 329–335.
  Hormonal interaction in metamorphosis, 297–308.
  Introduction, 295–296.
  Preadaptive role of TH in salmon, 337–349.
  Thyroid and nutrition, 351–362.
  Thyroid economy of teleost fish, 319–328.
  Thyroid hormone control in domestic fowls, 401–415.
  Thyroid hormone in tadpole development, 309–318.
  Thyroid hormone receptors in chick embryo, 389–399.
  Thyroid regulation in chick embryo, 417–426.
  Thyroid regulation of Na,K-ATPase, 363–371.
CUTANEOUS EXCHANGE OF GASES AND IONS, 939–1045.
  Cardiovascular regulation of skin gas exchange, 985–998.
  Cutaneous ga.. exchange models, 963–972.
  Cutaneous ion and gas exchange, 1009–1018.
  Cutaneous ion exchange, 1019–1029.
  Evolution and ecology of integumentary respiration, 1031–1045.
  Introduction, 941–944.
  Microvascular control of skin breathing, 999–1007.
  Skin structure and permeability, 945–962.
  Ventilation of "infinite pool" exchangers, 973–983.

DAWSON, WILLIAM R., An experimental natural history of some terrestrial vertebrates, 1181–1188.
DECUYPERE, EDDY AND EDUARD R. KÜHN, Thyroid hormone physiology in Galliformes: Age and strain related changes in physiological control, 401–415.
DEFUR, PETER L., Systematic respiratory adaptations to air exposure in intertidal decapod crustaceans, 115–124.
DENBURG, JEFFREY L., Cell-cell recognition in the regenerating neuromuscular system of the cockroach, 1135–1144.
DENT, JAMES NORMAN, Hormonal interaction in amphibian metamorphosis, 297–308.
DEXTER, RALPH W., History of American marine biology and marine biology institutions. Introduction: Origins of American marine biology, 3–6.
DEYRUP-OLSEN, INGRITH, Five examples illustrating the study of form and function, 585–617.
DISTEFANO, JOSEPH J., III, Excretion, metabolism and enterohepatic circulation pathways and their role in overall thyroid hormone regulation in the rat, 373–387.
DONNELLY, DI, see BRANCH, GEORGE M. *et al.*
DREWES, CHARLES D., ELIZABETH P. VINING, AND MARK J. ZORAN, Regeneration of rapid escape reflex pathways in earthworms, 1077–1089.
EAKIN, RICHARD M., see "BEAUMONT, WILLIAM."
EALES, J. GEOFFREY, The influence of nutritional state on thyroid function in various vertebrates, 351–362.
EALES, J. GEOFFREY, E. GORDON GRAU, F. M. ANNE MCNABB, AND JENNIFER L. SPECKER, Introduction to the symposium: Comparative endocrinology of the thyroid, 295–296.
EDWARDS, JOHN S., Sensory regeneration in arthropods: Implications of homeosis and of ectopic sensilla, 1155–1164.
ELLINGTON, W. ROSS AND BRIAN R. MCMAHON, Introduction to the symposium: Mechanisms of physiological compensation in intertidal animals, 37–38.
ENERGETICS AND ANIMAL BEHAVIOR, 811–938.
  Behavioral innovation in pierids, 899–912.
  Behavior, energy and fitness, 815–827.
  Costs of fighting, 877–884.
  Energetics and mammalian reproduction, 863–875.
  Energetics and spread-wing behavior, 845–851.
  Energy, calling, and selection, 885–898.
  Energy maximizers and time minimizers, 913–925.
  Introduction, 813–814.
  Reptile activity and locomotor performance, 927–938.
  Time and energy budgets of free-living birds, 829–844.
  Time constraints on reproduction, 853–862.
Exchange of gases and ions, cutaneous, 939–1045.
FEDER, MARTIN E., WARREN W. BURGGREN, AND JEFFREY B. GRAHAM, Introduction to the symposium: Cutaneous exchange of gases and ions, 941–944.
FEDER, MARTIN E. AND ALAN W. PINDER, Ventilation and its effect on "infinite pool" exchangers, 973–983.
Form and function, science as a way of knowing, 441–808.
FREDMAN, STEVEN M. AND PETRA GAGE NUTZ, Regeneration of identified neurons and their synaptic connections in the central nervous system of *Aplysia*, 1099–1108.
GALLO-PAYET, NICOLE, see BELLABARBA, DIEGO *et al.*
GALTON, VALERIE ANNE, The role of thyroid hormone in amphibian development, 309–318.
GANS, CARL, Adaptation and the form–function relation, 681–697.
GARLAND, THEODORE, JR., see HERTZ, PAUL E. *et al.*
GITTLEMAN, JOHN L. AND STEVEN D. THOMPSON, Energy allocation in mammalian reproduction, 863–875.
GITTLEMAN, JOHN L. AND STEVEN D. THOMPSON, Introduction to the symposium: Energetics and animal behavior, 813–814.
GNAIGER, ERICH, see SHICK, MALCOLM *et al.*
GOLDSTEIN, DAVID L., Estimates of daily energy expenditure in birds: The time-energy budget as an integrator of laboratory and field studies, 829–844.
GORNIAK, GERARD C., Morphological and functional questions on the growth and plasticity of mammalian and avian jaw muscles, 247–255.
GRAHAM, JEFFREY B., Ecological and evolutionary aspects of integumentary respiration: Body size, diffusion, and the Invertebrata, 1031–1045.
GRAHAM, JEFFREY B., see FEDER, MARTIN E. *et al.*
GRAU, E. GORDON, Environmental influences on thyroid function in teleost fish, 329–335.
GRAU, E. GORDON, see EALES, J. GEOFFREY *et al.*
GRIESBACH, DEBORAH A., see THOMMES, ROBERT C. *et al.*
GUTMANN, WOLFGANG FRIEDRICK, The hydraulic principle, 257–266.
HART, NATHAN H. AND GARY ANDERSON, Films and videotapes on form and function, 803–804.
HAWKINS, A. J. S., see BAYNE, B. L. *et al.*
HEIMFELD, S., see BODE, H. R. *et al.*
HENNEMANN, WILLARD W., III, Energetics and spread-wing behavior in Anhingas and Double-crested Cormorants: The risks of generalization, 845–851.
HERRING, SUSAN W., Introduction: How to do functional morphology, 189–192.
HERTZ, PAUL E., RAYMOND B. HUEY, AND THEODORE GARLAND, JR., Time budgets, thermoregulation, and maximal locomotor performance: Are reptiles olympians or boy scouts?, 927–938.
HICKMAN, CAROLE S., Analysis of form and function in fossils, 775–793.
HILDEBRAND, MILTON, Form and function in vertebrate feeding and locomotion, 727–738.
HISTORY OF AMERICAN MARINE BIOLOGY AND MARINE BIOLOGY INSTITUTIONS, 1–34.
  Origins of American marine biology, 3–6.
  Teaching and research at marine stations, 27–34.
  The teaching argument, 7–14.
  Why do research at the seashore?, 15–25.
HIXON, MARK A. AND F. LYNN CARPENTER, Distinguishing energy maximizers from time minimiz-

ers: A comparative study of two hummingbird species, 913–925.
HOLMAN, MOLLY, see KOOPOWITZ, HAROLD.
HOMBERGER, DOMINIQUE G., Models and tests in functional morphology: The significance of description and integration, 217–229.
HOMBERGER, DOMINIQUE G., see BOCK, WALTER J.
HOWES, E. A., see SMITH, P. J. S.
HUEY, RAYMOND B., see HERTZ, PAUL E. *et al.*
HYLKA, VINCENT W., see THOMMES, ROBERT C. *et al.*
ISMAIL-BEIGI, FARAMARZ, Thyroid thermogenesis: Regulation of ($Na^+ + K^+$)-adenosine triphosphatase and active Na,K transport, 363–371.
JONES, PETER G., see BULLOCH, ANDREW G. M.
KALTENBACH, JANE C., Endocrine aspects of homeostasis, 761–773.
KINGSOLVER, JOEL G., Thermoregulation, flight, and the evolution of wing pattern in pierid butterflies: The topography of adaptive landscapes, 899–912.
KOIZUMI, O., see BODE, H. R. *et al.*
KOOPOWITZ, HAROLD AND MOLLY HOLMAN, Neuronal repair and recovery of function in the polyclad flatworm, *Notoplana acticola*, 1065–1075.
KÜHN, EDUARD R., see DECUYPERE, EDDY.
LEATHERLAND, JOHN F., Endocrine factors affecting thyroid economy of teleost fish, 319–328.
LEHOUX, JEAN-GUY, see BELLABARBA, DIEGO *et al.*
LIEM, KAREL F., Form and function of lungs: The evolution of air breathing mechanisms, 739–759.
LILLYWHITE, HARVEY B. AND PAUL F. A. MADERSON, The structure and permeability of integument, 945–962.
LITTLEFIELD, C. L., see BODE, H. R. *et al.*
MADERSON, PAUL F. A., see LILLYWHITE, HARVEY B.
MAIENSCHEIN, JANE, History of American marine laboratories: Why do research at the seashore?, 15–25.
MALVIN, GARY M., Microvascular regulation of cutaneous gas exchange in amphibians, 999–1007.
Marine biology and marine biology institutions, history of American, 1–34.
MAYER, WILLIAM V., The role of form and function in the collegiate biology curriculum, 619–664.
MAYER, WILLIAM V., SAAWOK in perspective, 795–802.
MCMAHON, BRIAN R., Physiological responses to oxygen depletion in intertidal animals, 39–53.
MCMAHON, BRIAN R., see ELLINGTON, W. ROSS.
MCMAHON, ROBERT F., Respiratory response to periodic emergence in intertidal molluscs, 97–114.
MCNABB, F. M. ANNE, Peripheral thyroid hormone dynamics in precocial and altricial avian development, 427–440.
MCNABB, F. M. ANNE, see EALES, J. GEOFFREY *et al.*
MECHANISMS OF PHYSIOLOGICAL COMPENSATION IN INTERTIDAL ANIMALS, 35–181.
Acid-base balance during intertidal air exposure, 125–135.
Acid-base balance in tidepool animals, 55–64.
Aerial respiration in intertidal molluscs, 97–114.
Calorimetry of intertidal animals, 161–181.
Fish respiratory adaptations, 79–96.
Integrated responses to salinity, 65–77.
Introduction, 37–38.
Oxygen consumption of intertidal organisms, 137–146.
Oxygen depletion in intertidal animals, 39–53.
Respiratory adaptations of intertidal decapods, 115–124.
Suspension feeding bivalves: Feeding and digestion, 147–159.
MOFFETT, STACIA B. AND RICHARD L. RIDGWAY, Structural repair and functional recovery following cerebral ganglion removal in the pulmonate snail *Melampus*, 1109–1122.
MOFFETT, STACIA B., see RIDGWAY, RICHARD L.
MOFFETT, STACIA B., see RIDGWAY, RICHARD L. (Introduction)
MOORE, JOHN A., Understanding nature—Form and function, 449–584.
Morphology, questions, explanations, models and tests in: The interaction between hypotheses and empirical observations, 183–288.
MULLER, KENNETH J., Synapse regeneration, axon sprouting and degeneration in the central nervous system of the leech, 1091–1097.
NAVARRO, E., see BAYNE, B. L. *et al.*
NERVOUS SYSTEM REGENERATION IN THE INVERTEBRATES, 1049–1179.
Ganglion regeneration in *Melampus*, 1109–1122.
Glial regeneration in an insect CNS, 1145–1153.
Hydra nerve net, 1053–1063.
Introduction, 1051–1052.
Motor axon regeneration in the cockroach, 1135–1144.
Neurite outgrowth in *Helisoma*, 1123–1134.
Neuron repair and degeneration in leeches, 1091–1097.
Nerve repair in flatworms, 1065–1075.
Regeneration of *Aplysia* neurons, 1099–1108.
Regeneration of escape reflex in earthworms, 1077–1089.
Sensory regeneration in arthropods, 1155–1164.
Survival of severed axonal stumps, 1165–1179.
NUTZ, PETRA GAGE, see FREDMAN, STEVEN M.
Past-presidential address, 1181–1188.
PIIPER, JOHANNES, Models for cutaneous gas exchange and transport, 963–972.
PINDER, ALAN W., see FEDER, MARTIN E.
Physiological compensation, mechanisms of, in intertidal animals, 35–181.
QUESTIONS, EXPLANATIONS, MODELS AND TESTS IN MORPHOLOGY: THE INTERACTION BETWEEN HYPOTHESES AND EMPIRICAL OBSERVATIONS, 183–288.
Evolutionary convergence of bivalved shells, 267–276.
Explanations in morphology, 205–215.
Growth and plasticity of jaw muscles, 247–255.
Holism and neutralism for open systems, 277–288.
Hypotheses and morphological data, 231–236.
Introduction, 189–192.
Models and tests in morphology, 217–229.
Preface, 185–187.
Reductionism, 193–203.
The hydraulic principle, 257–266.
Why mammals gallop, 237–245.
Regeneration in the invertebrates, nervous system, 1049–1179.

RICKLEFS, ROBERT E., see CLARK, LARRY.
RIDGWAY, RICHARD L. AND STACIA B. MOFFETT, Introduction to the symposium: Nervous system regeneration in the invertebrates, 1051–1052.
RIECHERT, SUSAN E., The energetic costs of fighting, 877–884.
ROPKA, STACIE L., see THOMMES, ROBERT C. *et al.*
RYAN, MICHAEL J., Energy, calling, and selection, 885–898.
SCIENCE AS A WAY OF KNOWING—FORM AND FUNCTION, 441–808.
Adaptation and the form–function relation, 681–697.
Collegiate biology curriculum, 619–664.
Determinates of metabolic rate, 699–708.
Endocrine aspects of homeostasis, 761–773.
Examples illustrating form and function, 585–617.
Films and videotapes, 803–804.
Form and function, 445–448.
Form and function in fossils, 775–793.
Form and function in organisms, 671–680.
Form and function of lungs, 739–759.
Functional morphology of vertebrates, 727–738.
Gastric digestion, 665–670.
Index, 805–808.
SAAWOK in perspective, 795–802.
Understanding nature, 449–584.
Vertebrate swimming, 709–725.
SHICK, J. MALCOLM, JOHN WIDDOWS, AND ERICH GNAIGER, Calorimetric studies of behavior, metabolism and energetics of sessile intertidal animals, 161–181.
SMITH, P. J. S., E. A. HOWES, AND J. E. TREHERNE, Reactive cells and their role in glial regeneration in an insect CNS, 1145–1153.
SPECKER, JENNIFER L., Preadaptive role of thyroid hormones in larval and juvenile salmon: Growth, the gut and evolutionary considerations, 337–349.
SPECKER, JENNIFER L., see EALES, J. GEOFFREY *et al.*
STIFFLER, DANIEL F., Cutaneous exchange of ions in lower vertebrates, 1019–1029.
TERWILLIGER, ROBERT C., Teaching and research at marine stations: Present priorities, future directions, 27–34.
THOMAS, R. D. K., Evolutionary convergence of bivalved shells: A comparative analysis of constructional constraints on their morphology, 267–276.
THOMMES, ROBERT C., VINCENT W. HYLKA, SHARON A. TONETTA, DEBORAH A. GRIESBACH, STACIE L. ROPKA, AND JAMES E. WOODS, Hypothalamic regulation of the pituitary-thyroid unit in the developing chick embryo, 417–426.
THOMPSON, STEVEN D., see GITTLEMAN, JOHN L.
THOMPSON, STEVEN D., see GITTLEMAN, JOHN L. (Introduction)
Thyroid, comparative endocrinology of the, 293–440.
TONETTA, SHARON A., see THOMMES, ROBERT C. *et al.*
TREHERNE, J. E., see SMITH, P. J. S.
TRUCHOT, JEAN-PAUL, Problems of acid-base balance in rapidly changing intertidal environments, 55–64.
VINING, ELIZABETH P., see DREWES, CHARLES D.
WAINWRIGHT, STEPHEN A., Form and function in organisms, 671–680.
WEBB, PAUL W., Simple physical principles and vertebrate aquatic locomotion, 709–725.
WEBSTER, DOUGLAS B. AND MOLLY WEBSTER, Hypotheses derived from morphological data: When and how they are useful, 231–236.
WEBSTER, MOLLY, see WEBSTER, DOUGLAS B.
WHEATLY, MICHELE G., Integrated responses to salinity fluctuation, 65–77.
WIDDOWS, JOHN, see SHICK, J. MALCOLM *et al.*
WOODS, JAMES E., see THOMMES, ROBERT C. *et al.*
YAROSS, M. S., see BODE, H. R. *et al.*
ZORAN, MARK, see DREWES, CHARLES D.
ZWEERS, GART, Holism and neutralism for open systems, 277–288.